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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF HAWAII

In the Matter of the Application	)	
	)	
HAWAIIAN ELECTRIC COMPANY, INC.	)	DOCKET NO. 05-0069
	)	
For Approval and/or Modification of Demand-Side and Load Management Programs and Recovery of Program Costs and DSM Utility Incentives	)	

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MEMORANDUM IN RESPONSE TO HAWAIIAN ELECTRIC COMPANY, INC.'S MEMORANDUM IN RESPONSE TO MOTION TO INTERVENE AND MOTION FOR ENLARGEMENT OF TIME OF HONOLULU SEAWATER AIR CONDITIONING, LLC

AND

CERTIFICATE OF SERVICE

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MEMORANDUM IN RESPONSE TO HAWAIIAN ELECTRIC COMPANY, INC.'S MEMORANDUM IN RESPONSE TO MOTION TO INTERVENE AND MOTION FOR ENLARGEMENT OF TIME OF HONOLULU SEAWATER AIR CONDITIONING, LLC

This Memorandum is respectfully filed by Honolulu Seawater Air Conditioning, LLC ("HSWAC") in response to Hawaiian Electric Company, Inc.'s ("HECO") Memorandum in Response ("Memorandum in Response") to Motion to Intervene and Motion for Enlargement of Time of Honolulu Seawater Air Conditioning, LLC, dated July 5, 2005.

HSWAC withdraws its Motion for Enlargement, but respectfully requests that the Commission grant HSWAC's Motion to Intervene for the following reasons:

1. On page 7 of HECO's Memorandum in Response, "[t]he general rule with respect to intervention, as stated by the Hawaii Supreme Court, is that intervention as a party to a proceeding before the Commission '... is a matter resting within the sound discretion of the Commission.' "

2. HSWAC maintains that the potential benefit of seawater air conditioning district cooling systems currently under development for Downtown Honolulu and Waikiki is crucial to the success of HECO's Integrated Resources Program, and to implementation of State Energy Policies, and that granting HSWAC intervener status in the subject docket would be "within the sound discretion of the Commission."

3. HSWAC is currently developing a 25,000-ton seawater air conditioning ("SWAC") district cooling system for downtown Honolulu. HSWAC is also developing a similar 25,000-ton seawater air conditioning district cooling system for Waikiki. Both of these projects are expected to be completed prior to the end of 2009.

4. Market Street Energy Company LLC, of St. Paul, Minnesota, the parent company of HSWAC, has more than twenty years experience in operating district energy systems and is uniquely qualified to develop and operate SWAC district cooling systems in Hawaii. HSWAC has been organized for this purpose.

5. The internationally-recognized leading ocean engineering firm, Hawaii-based Makai Ocean Engineering has designed and installed many deep, seawater pipes, is Hawaii's "Professional Services Exporter of the Year" for 2003, and has agreed to assist Honolulu Seawater Air Conditioning LLC in this effort. HSWAC has also engaged the services of The

Environmental Company (TEC Inc.). TEC is serving as the Permit Manager.

6. Market Street Energy LLC is a for-profit affiliate of District Energy St. Paul, a nonprofit heating utility, and District Cooling St. Paul, a nonprofit cooling utility. The heating and cooling companies are recognized among the nation's most successful public/private energy partnerships. Market Street Energy conceived and operates a renewable fuel, combined heat and power generation facility. For Market Street Energy, the undertaking is a logical extension of the company's energy-efficiency and renewable energy mission with resulting positive cash flow for Market Street Energy's owners.

7. Market Street Energy personnel have direct experience in developing Scandinavian projects, including Europe's largest seawater air conditioning project in Stockholm, Sweden. In 1992 Anders Rydaker. President and CEO of HSWAC, introduced seawater district cooling in Stockholm. The Stockholm system includes approximately 80,000 tons of air conditioning load and is still expanding. HSWAC's Vice President of Engineering, Ingvar Larsson, also has extensive experience in SWAC development in Sweden.

8. The status of the Downtown Honolulu Project is as follows:

   - Thirty-nine of 65 potential customers in the Downtown service area (Kakaako Makai to Downtown Honolulu) have been contacted.

Customer response has been very favorable. These customers represent 82.3% of the total air conditioning demand of nearly 33,000 tons. The potential tonnage is expected to increase with the on-going development of properties in the Kakaako area. More detailed evaluations of customer interconnection requirements are underway.

- Conceptual designs of the seawater distribution system, the chilled water distribution system, and the cooling station have been completed. Final designs of these system components have begun. Negotiations for a cooling station site are underway.

- A Permit Manager has been obtained. Discussions have been held with all affected federal, State, and City & County of Honolulu agencies. Permit requirements have been identified. The preliminary scoping process has begun, with presentations to numerous government agencies, and energy, environmental, technical and public groups. A Draft Environmental Impact Statement is being prepared and several surveys to support the completion of this document have been completed.

- The State of Hawaii has authorized $80 million in tax-exempt Special Purpose Revenue Bonds and has granted seawater air conditioning district cooling systems an exemption from Public Utilities Commission regulation. Act 95 (Renewable Portfolio Standard), of the 2004 State legislature, has defined seawater air conditioning as an eligible

renewable energy technology. The State of Hawaii – Department of Taxation has provided HSWAC with a comfort letter stating that these projects qualify for Act 221/215 tax benefits under the renewable energy classification. A business plan has been prepared and negotiations are underway for an additional $24 million in equity capital and $16 million in additional bond funding.

- This project is planned to be operational in mid-2007.

9. The status of the Waikiki Project is as follows:

- Eleven of 38 potential customers in the Waikiki service area (Waikiki to Ala Moana) have been contacted. Customer response has been very favorable. These customers represent 62.8% of the total air conditioning demand of nearly 37,000 tons. The potential tonnage is expected to increase with the on-going development of properties in the Waikiki-Ala Moana area.

- Preliminary evaluations of the seawater distribution and the chilled water distribution system are being made. Potential cooling station sites are being identified. Several potential customers have suggested potential sites for the cooling station, including some situated on the customers' sites and incorporated into existing or planned facilities.

- There are a number of synergies between the Downtown Honolulu and Waikiki Projects that may help to reduce the development time for both

projects (e.g., similar permitting requirements, similarities in design of seawater distributions systems, etc.)

- The Waikiki Project is planned to be complete by the end of 2009.

10. All project funding to date has been provided by Market Street Energy Company, LLC. The Downtown Honolulu and Waikiki projects involve a total investment of up to $240 million. This clearly demonstrates that HSWAC has a significant "property and financial interest in this docket."

11. The Downtown Honolulu and Waikiki projects will provide the following benefits to customers, to HECO, and to the State:

- **Energy Efficiency and Demand Side Management Benefits.** Energy savings with SWAC systems are 75%, or more, compared to conventional air conditioning.
  - Each ton of SWAC eliminates the need for more than 2,500 kWh/year of energy use.
  - The Downtown Honolulu and Waikiki Projects will save up to 126 million kWh per year. This is equivalent to nearly 50,700 residential solar water heating systems.
  - Each ton of SWAC eliminates the need for up to 0.68 kilowatts of new (likely-to-be-fossil-fueled) generation capacity.
  - The Downtown Honolulu and Waikiki Projects will eliminate the need for up to 34 megawatts of new generation. This is equivalent to nearly 46,200 residential solar water heating systems. This is

also nearly ½ of the 69 MW of Demand-Side Management projects HECO has proposed in its 5-Year (2005 – 2010) Action Plan.

- This reduced demand for new energy generation is equivalent to 2.0 to 2.4 years of HECO's projected load growth. This will provide HECO additional time to develop their proposed 2009 power plant.
- The reduced need for expensive new electricity generation capacity will help to keep electric rates lower for longer.

- **Renewable Energy Use.** SWAC uses an infinite, 100% renewable energy resource - cold, deep seawater.
  - SWAC will greatly help the State of Hawaii, and HECO, meet new Renewable Portfolio Standard (RPS) Standards. The Downtown Honolulu and Waikiki Projects will provide 6% of the governor's goal of 20% renewables by the year 2020 (for Oahu). An estimated additional 50,000 tons of SWAC potential on Oahu will provide an additional 6% of this goal.
  - More than 90% of the energy savings from SWAC are due to the use of an abundant, infinite renewable energy resource – cold, deep seawater.
  - With limited land area and high electrical demand, Oahu will have the greatest challenge in meeting RPS Standards. SWAC is the renewable energy technology that can provide the greatest benefits to Oahu in the near term.

- The Downtown Honolulu and Waikiki Projects will provide renewable energy benefits equal to:
  - 68 MW of photovoltaics (at a Capacity Factor [CF] = 0.21);
  - 45 MW of wind (at a CF = 0.32); or
  - 22 MW of MSW or biomass combustion (at a CF = 0.65).
- The amount of renewable energy provided by the Downtown Honolulu and Waikiki Projects will double that proposed by HECO in its Draft Preferred IRP Plan.

- **Reduced Oil Dependence.** Hawaii is more than 90% dependent on imported fossil fuels, most of this is oil. A SWAC system can significantly reduce imports of crude oil.
  - The Downtown Honolulu and Waikiki Projects will reduce crude oil imports by up to 290,000 barrels per year.
- **Government Energy Goals and Mandates.** SWAC systems will help the City & County of Honolulu, the State of Hawaii, and the federal government to meet goals and mandates for energy efficiency and renewable energy use.
  - Government buildings will be able to meet more than 80% of State and Federal mandates for energy efficiency and renewable energy use by just connecting to a SWAC system.
- **Environmental Benefits.** Reduced use of fossil fuels provides for significant reductions in greenhouse gas emissions and other air and

water pollutants. SWAC systems greatly reduce the use of harmful chemicals (refrigerants) used in conventional cooling systems.

- The Downtown Honolulu and Waikiki Projects will reduce the production of pollutants from fossil fuel combustion by up to the following amounts:

▪ Carbon Dioxide (CO_2) Emissions	138,000 tons/year
▪ Volatile Organic Compounds (VOC) Emissions	9 tons/year
▪ Carbon Monoxide (CO) Emissions	45 tons/year
▪ Particulate Matter under 10 microns (PM_{10}) Emissions	30 tons/year
▪ Nitrogen Oxides (NOx) Emissions	275 tons/year
▪ Sulfur Oxides (SOx) Emissions	269 tons/year

- **Reduced Potable Water Use.** SWAC systems eliminate the need for cooling towers and, as a result, reduce potable water use, toxic chemical use, and the production of sewage.
  - The Downtown Honolulu and Waikiki Projects will save up to 529 million gallons of potable water per year.
  - The Downtown Honolulu and Waikiki Projects will reduce sewage generation by up to 166 million gallons per year.
  - SWAC systems eliminate the need for cooling water treatment chemicals.
- **Local Economic Development.** A SWAC project will generate millions of dollars in construction project spending. In addition to

construction jobs, a significant number of long-term, well-paid jobs will also be created. Other local economic development benefits will accrue from money that stays in Hawaii, and is not used to purchase oil.

- **Stable Cooling Costs.** Honolulu has some of the highest electricity costs in the nation. And, these costs have been increasing faster than the rate of inflation. SWAC systems will provide customers with reduced and stable cooling costs.
  - Average commercial electricity costs in Honolulu in 2004 were close to 14 cents/kWh.
  - These costs have increased at a real (inflation-adjusted) rate of more than 1.4%/year over the period of 1990 to 2003. Annual increases, with inflation, are nearly 3.3%/yr.
  - At this rate, real electricity costs will increase by more than 32% over the 20-year book life of a SWAC project (with inflation, the cost increase is nearly 90%).
  - Energy costs are a small fraction of total costs for a SWAC system and SWAC life cycle costs will, therefore, remain stable.
- **Reduced Operations and Maintenance Costs.** Large-scale, district cooling systems have lower operating and maintenance costs than individual building air conditioning systems.
- **Reliable Cooling.** SWAC systems are simple, and technically and economically feasible today. SWAC systems use industrial-grade, off-

the-shelf components. Seawater supply systems have many years of use and demonstrated reliability in sometimes hostile environments. Deep water cooling systems have been successfully installed and operated in a number of areas worldwide from Stockholm, Sweden to NELHA on the Big Island, Hawaii. Large-scale district cooling systems with, or without, thermal energy storage are successful, low cost, energy efficient, environmentally friendly and have been used worldwide. District cooling and heating provided by Market Street Energy Company, LLC have a reliable record of 99.99% reliability, much superior to the typical reliability of local electric utilities, or conventional, building on-site air conditioning.

- **Customers.** SWAC systems provide convenient, reliable, low, 20-year very stable-cost cooling.
- **Secondary Benefits.** There are a number of potential uses of the seawater that leaves the SWAC system. Among these are: (1) auxiliary cooling for power plants, industrial facilities, and cooling systems; (2) flushing of harbors and canals; and (3) cold water agriculture and aquaculture.

12. The Downtown Honolulu and Waikiki Projects will constitute the largest component of HECO's IRP Program, in the proposed 5-year (2005 – 2010) Action Plan of their Draft Preferred IRP Plan. There is no assurance that HECO's projections for implementation of Combined Heat & Power/Distributed Generation will materialize in the Action Plan period. As

such, failure to include this important SWAC component will further reduce the probability that IRP goals can be met.

13. According to Order No. 21698, "[i]n its Application, HECO states that it assessed the energy efficiency achievable potential for Oahu as part of its third IRP process in Docket No. 03-253. HECO's findings of the assessment suggest that 'even with the accomplishments from HECO's existing energy efficiency programs, significant potential still exists for additional energy savings on Oahu, ... these energy savings can best be realized through a major expansion of HECO's energy efficiency DSM program efforts, and ... this will necessitate that HECO expand its existing DSM program portfolio to include previously underserved markets for energy efficiency.' " HSWAC Applicant concurs with this assessment and maintains that commercial and multi-unit residential air conditioning is one of these "underserved markets for energy efficiency." HSWAC is uniquely qualified to serve this market.

14. HSWAC is not a member of any existing party to the subject docket.

15. HSWAC continues to maintain that there will be no harm to the parties in this docket if HSWAC is allowed to intervene and, in fact, maintains that this proceeding will benefit through HSWAC's participation.

16. HSWAC's participation will not broaden the issues or delay the proceedings.

17. HSWAC maintains that SWAC systems have not been adequately evaluated and incorporated into HECO's DSM plans, to date, and that the benefits of SWAC systems will be a substantial and cost-effective addition to HECO's DSM program.

18. HSWAC is uniquely aware of, and experienced in, the marketing, economics and performance of seawater air conditioning district energy systems. This knowledge and experience has been gained via the marketing, design, installation and testing of a number of such systems over a number of years. This knowledge and experience will be extremely useful in assisting the Commission, and other parties, in developing the most effective DSM program.

19. HSWAC is in a unique position to provide "...additional information relating to energy efficiency programs [to assist the Commission] to determine whether those proposed by HECO are the best means of achieving energy savings, as it suggests."

20. HSWAC maintains that the rebate program proposed for seawater air conditioning district cooling systems (under the CICR Program), while a step in the right direction, does not provide a rebate that is proportional, and equitable, to that provided to other demand side management technologies. HECO's proposed rebate for seawater air conditioning district cooling systems is also not proportional to the benefits that such systems provide.

21. HSWAC maintains that providing a rebate that is both proportional to the benefits provided, and equitable, to that provided to other demand side management technologies, will help to make seawater air conditioning district cooling systems more cost effective to the customers these systems will serve.

22. HECO did not take a position on HSWAC's Motion to Intervene, and no other party objected to HSWAC's Motion to Intervene and Motion for Enlargement of Time.

CONCLUSION

Based on the foregoing, Applicant respectfully requests that the Commission grant its Motion to Intervene.

DATED: Honolulu, Hawaii July 14, 2005.

Matt Matsunaga

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Honolulu Seawater Air Conditioning, LLC

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing Motion to Intervene and Motion for Enlargement of Time upon the following parties by causing a copy hereof to be hand-delivered or mailed, postage prepaid, and properly addressed to such party as follows:

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